

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figs 5, 6, and 8. These sheets, which include Figs. 5, 6, and 8, replace the original sheets including Figs. 5, 6, and 8. The following changes have been made to Fig. 5, 6, and 8 to remove clarify the description of gray scale levels.

Attachment: Replacement sheet
 Annotated sheet showing changes

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Office Action dated July 3, 2006 has been received and its contents carefully reviewed.

Claims 1-23 are rejected by the Examiner. Claims 3, 7-9, 11-12, and 17-20 are objected to by the Examiner. Claims 1, 3, 7-9, 11, 12, 17-20 have been amended. No new matter has been added. Claim 15 has been canceled without prejudice or disclaimer. Claims 1-23 remain pending in the application.

In the Office Action, claims 1 and 3-7 are rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 6,008,786 to Kimura et al. (hereinafter “Kimura”). Claims 1-10 and 12-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 5,677,741 to Yui (hereinafter “Yui”) in view of Kimura. Claims 11 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yui in view Kimura, and further in view of US Patent No. 5,677,741 to D’Souza et al. (hereinafter “D’Souza”). The specification is objected to by the Examiner as containing informalities. The drawings are objected by the Examiner.

The rejection to claims 1 and 3-7 under 35 U.S.C. § 102(b) as being anticipated by Kimura is respectfully traversed and reconsideration is requested. Applicants submit that Kimura does not disclose, inherently or explicitly, each feature of the claims.

Claims 1 and 3-7 each recite a liquid crystal display device having a combination of features including “a lookup table for storing a gray scale value corresponding to a predetermined gray scale level of a displayable color.” In the Office Action, the Examiner cites Kimura as disclosing the quoted combination of features, in particular identifying “additions/subtraction amounts in FIG. 7” as gray scale values, and identifying the values on left side of FIG. 6 as “predetermined gray scale level of a displayable color.” Applicants respectfully disagree with the Examiner’s conclusion regarding the disclosure of Kimura.

Applicants first submit that the stored values cited by the examiner are not a “gray scale value” as recited in claims 1, and 3-7. Kimura, at column 4, lines 48-54, states the following concerning the table in FIG. 7:

The addition/subtraction table 34 has the function of setting the actual amount of the addition or subtraction. A diagrammatic representation of the addition/subtraction

table 34 is shown in FIG. 7. That is, the addition/subtraction tables set the amount to be added or subtracted according to the condition provided from the condition determination table 33. The amount of the addition or subtraction to correct the gray scale is supplied to the computing circuit 32.

Applicants further note that the values in the “Addition/Subtraction Amount” column of FIG. 7 include negative values such as ‘-2’ and ‘-4’. Applicants submit that the values identified by the Examiner as “gray scale values” are not disclosed in Kimura to be gray scale values but are amounts “to be added or subtracted” to correct a gray scale value. Accordingly, Applicants submit that claims 1 and 3-7 are not anticipated by Kimura for at least this reason.

The rejection to claims 1-10 and 12-22 under 35 U.S.C. § 103(a) as being unpatentable over Yui in view of Kimura is respectfully traversed and reconsideration is requested. Applicants submit that Yui and Kimura, analyzed singly or in combination, do not teach or suggest each claimed element.

Claims 1-10 each recites a liquid crystal display device having a combination of features including “a data processing unit to retrieve a gray scale value from the lookup table and to compensate image information according to the retrieved gray scale value.” In rejecting claims 1-10, the Examiner cites Yui as disclosing this element, identifying items 5 and 7 of FIG. 1 of Yui as the data driving unit and the data processing unit respectively. In describing FIG. 1, Yui discloses, “A color conversion table 3 comprises a rewritable RAM which stores color conversion table data 14 supplied from the controller 7, and looks up data (address) supplied from the selector 2 to output table data 4 based on the looked-up data. A display controller 5 controls the display operation of a display 6 as an output display device on the basis of the table data 4 supplied from the color conversion table 3.” See Yui at column 2, lines 42-48. Applicants submit that Yui does not teach at least “a data processing unit ... to compensate image information according to the retrieved gray scale value” as recited in claims 1-10.

The Examiner cites Kimura to cure the deficiencies in the teachings of Yui. In particular the Examiner cites Kimura as teaching, “a LCD panel with the requisite control circuitry.” Applicants do not reach the Examiner’s conclusion regarding the teachings of Kimura. Applicants submit that Kimura does not cure the above-described deficiencies of Yui. Applicants submit that Yui and Kimura, analyzed singly or in combination, do not teach or suggest at least “a data processing unit to retrieve a gray scale value from the lookup table and to

compensate image information according to the retrieved gray scale value.” Accordingly, Applicants submit that claims 1-10 are allowable over Yui and Kimura.

Claims 12-18 each recites a method for improving a color reproducibility of a liquid crystal display having a combination of features including “detecting a gray scale value at which a color reproducibility of the LCD device is reduced... wherein detecting includes measuring the gray scale level of a color displayed by the LCD panel.” Applicants submit that Yui does not teach the above-quoted element recited in claims 12-18.

In the Office action, the Examiner cites column 4, lines 64-67 of Yui as teaching “measuring the gray scale level of a displayable color.” Applicants respectfully disagree that Yui, including the portion cited by the examiner describes “measuring the gray scale level of a color displayed by the LCD panel.” Column 4, lines 64-67 of Yui state the following:

More specifically, processing for assigning all color space portions, which cannot be reproduced by the display side, to the closest portions in the host color space (clipping processing) is performed.

Applicants respectfully submit that the cited portion of Yui does not disclose making a measurement of any kind, and that no portion of Yui teaches “detecting a gray scale value at which a color reproducibility of the LCD device is reduced... wherein detecting includes measuring the gray scale level of a color displayed by the LCD panel.”

The Examiner cites Kimura to cure the deficiencies in the teachings of Yui with respect to “the display panel is a LCD panel.” Applicants do not reach the Examiner’s conclusion regarding the teachings of Kimura. Applicants submit that Kimura does not cure the above-described deficiencies of Yui. Applicants submit that Yui and Kimura, analyzed singly or in combination, do not teach or suggest at least “detecting a gray scale value at which a color reproducibility of the LCD device is reduced... wherein detecting includes measuring the gray scale level of a color displayed by the LCD panel.” Accordingly, Applicants submit that claims 12-18 are allowable over Yui and Kimura.

Claim 19-22 recites a method of driving a display device having a combination of features including “determining whether the gray scale value is greater than a predetermined corresponding gray scale level at which the color is displayable by the display panel.” Applicants submit that the cited references do not teach at least this quote combination of features.

The Examiner in rejecting the claims cites Yui, and in particular the text at column 2, lines 43-45 as disclosing the above-quoted combination of features recited in claims 19-22. Yui states the following at column 2, lines 43-45:

A color conversion table 3 comprises a rewritable RAM which stores color conversion table data 14 supplied from the controller 7, and looks up data (address) supplied from the selector 2 to output table data 4 based on the looked-up data. A display controller 5 controls the display operation of a display 6 as an output display device on the basis of the table data 4 supplied from the color conversion table 3.

Applicants respectfully disagree that Yui including the portion cited by the Examiner teaches “determining whether the gray scale value is greater than a predetermined corresponding gray scale level at which the color is displayable by the display panel” as recited by claims 19-22.

The Examiner cites Kimura to cure the deficiencies in the teachings of Yui. In particular the Examiner cites Kimura as teaching, “that the display panel is a LCD panel.” Applicants do not reach the Examiner’s conclusion regarding the teachings of Kimura. Applicants submit that Kimura does not cure the above-described deficiencies of Yui. Applicants submit that Yui and Kimura, analyzed singly or in combination, do not teach or suggest at least “determining whether the gray scale value is greater than a predetermined corresponding gray scale level at which the color is displayable by the display panel.” Accordingly, Applicants submit that claims 19-22 are allowable over Yui and Kimura.

The rejection to claims 11 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Yui in view of Kimura, and further in view of D’Souza is respectfully traversed and reconsideration is requested.

Claims 11 and 23 depend respectively from claims 1 and 19. As discussed above, Yui in view of Kimura do not claims 11 and 19 teach or suggest every element of claims 1 and 19.

The Examiner cites D’Souza as curing deficiencies in the teachings of Yui and Kimura with respect to “mixing gray scale values of at least two of R, G, and B colors.” Applicants do not reach the Examiner’s conclusion with regards to the teachings of D’Souza. Applicants submit that D’Souza does not cure the above described deficiencies in the teachings of Yui and Kimura with regards to claims 1 and 19. Applicants submit that Yui, Kimura, and D’Souza, analyzed singly or in any combination do not teach each and every element of claims 11 and 19.

Accordingly, Applicants submit that claims 1 and 19 and claims 11 and 23 depending respectively therefrom are allowable over Yui, Kimura, and D'Souza.

The Examiner objects to claims 3, 12, 19 and 20 as containing informalities. The Examiner objects the recitation of "the maximum gray scale value" in claims 3 and 12. With this response, Applicants have amended claims 3 and 12 to describe the maximum value with more particularity and respectfully request that the objection to claims 3 and 12 be withdrawn. The Examiner objects to the recitations of "information to the LCD device" and "the plurality of data lines" in claim 19 and 20 respectively. Applicants have amended claims 19 and 20 to clarify the recitations objected to by the Examiner, and respectfully request that the objection to claims 19 and 20 be withdrawn.

The Examiner objects to claims 7-9, 11, and 17-18 because of informalities. In particular the Examiner objects to the term "64-bit gray scale levels" as being inconsistent with the Applicants intended meaning. With this response, Applicants have amended the claims to remove the references to "bit gray scale levels" and respectfully request that the objections to claims 7-9, 11, and 17-18 be withdrawn.

The Examiner objects to the specification as containing informalities. In particular, the Examiner objects to the use of the terminology "64-bit gray scale." With this response, Applicants have removed the references to "64-bit gray scale" from the specification, and respectfully request that the objections to the specification be withdrawn.

The Examiner objects to FIGs. 5, 6, and 8 as containing informalities. In particular, the Examiner objects to the use of the terminology "64-bit gray scale." With this response, Applicants have provided replacement sheets containing amended FIGs. 5, 6, and 8 which do not contain use the term "64-bit gray scale," and respectfully request that the objections to the drawings be withdrawn.

Applicants believe the application is in condition for allowance and early, favorable action is respectfully solicited.


If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. *A duplicate copy of this sheet is enclosed.*

Respectfully submitted,

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By


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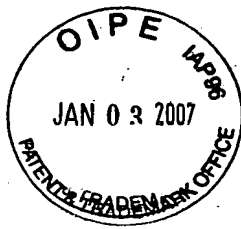


FIG. 5

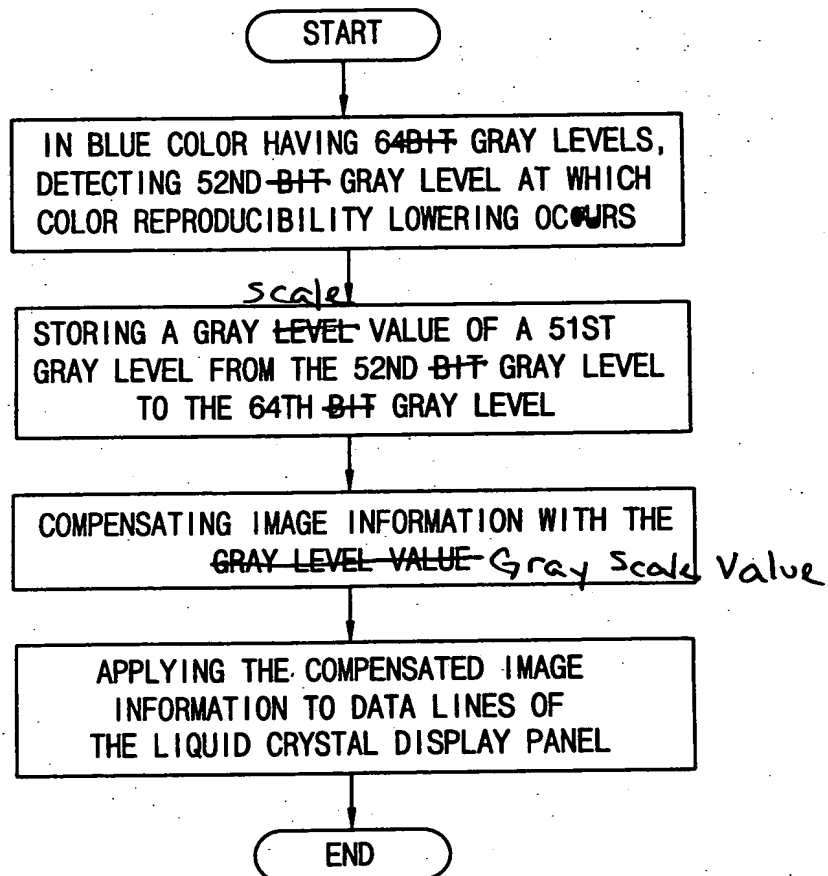


FIG. 6

260

B		Scale																3	2	1			
		GRAY LEVEL BIT	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50				49	48
		GRAY LEVEL VALUE	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49				48	47	....

FIG. 8

360

B	GRAY LEVEL BIT	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	.....	3	2	1
	GRAY LEVEL VALUE	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	48	47	.....	2	1	0
G	GRAY LEVEL VALUE	7	6	6	5	5	4	4	3	3	2	2	1	1	0	0	0	0	.....	0	0	0
R	GRAY LEVEL VALUE	6	6	5	5	4	4	3	3	2	2	1	1	0	0	0	0	0	.....	0	0	0